

REMARKS/ARGUMENTS

Claims 1-41 were pending in this application and examined.

Claims 1, 9, 10, 18, 19, and 21-41 have been amended. Claim 16 has been cancelled without prejudice. New claims 42-44 have been added. Claims 1-15 and 17-44 remain pending in this application after entry of this amendment.

THE DRAWINGS

Fig. 1A has been amended. More specifically, reference numeral 100 in Fig. 1A has been changed to 101 to correct duplicate reference numbers appearing in the figures. A corresponding change has been made to the specification. The attached replacement sheet comprising Figs. 1A and 1B replaces the original sheet including Figs. 1A and 1B.

THE SPECIFICATION

The specification has been amended to correct inadvertently introduced typographical errors. Applicant submits that no new material has been introduced by the amendments.

THE CLAIMS

Double Patenting Rejections

Claims 9-11

Claims 9-11 are rejected under 35 USC 101 as claiming the same invention as claims 1 and 9-10 of U.S. Patent No. 6,633,789.

Applicant submits that this rejection is moot in light of the amendments made to the claim 1.

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Amendments to the Drawings:

The attached sheet of drawings includes changes to Fig. 1A. In particular, reference numeral 100 in Fig. 1A is being changed to reference numeral 101. This sheet, which includes Figs. 1A and 1B replaces the original sheet including Figs. 1A and 1B.

Attachment: Replacement Sheet

Claims 2-8

Claims 2-8 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 2-8 of U.S. Patent No. 6,633,789.

A terminal disclaimer is being filed herewith to overcome the rejection.

Claims 12-20

Claims 12-20 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 11-19 of U.S. Patent No. 6,633,789.

A terminal disclaimer is being filed herewith to overcome the rejection.

Rejections under 35 USC 112

Claims 23-37

Claims 23-37 are rejected under 35 USC 112, first paragraph, as containing subject matter which was not described in the specification in such as way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. More specifically, the claims refer to differing file sizes and the Office Action alleges that there is no disclosure in the specification that would enable the creation of such files of predetermined sizes. Applicant traverses the rejection.

The test of enablement is set forth in MPEP 2164. MPEP 2164.01 states that "any analysis of whether a particular claim is supported by the disclosure in an application requires a determination of whether that disclosure, when filed, contained sufficient information regarding the subject matter of the claims as to enable one skilled in the pertinent art to make and use the claimed invention." The test for enablement is whether one reasonably skilled in the art could make or use the invention from the disclosures in the patent coupled with information known in the art without undue experimentation. A patent need not teach, and preferably omits, what is well known in the art.

Applicant submits that the specification as filed on June 21, 2001 describes and enables the subject matter recited by claims 23-37. For example, the section of the specification on page 2 line 31 through page 3 line 1 describes that compressing the digital model generates a

compacted file whose file size is selectable from five kilobytes to fifty or more megabytes in size; depending on the desired quality of the digital model. Further, Fig. 7 of the application as originally filed depicts various compressed models of a high-resolution model of the teeth. As depicted in Fig. 7 and as described in the accompanying description on page 12 of the application, a high-resolution model may require 2.373 megabytes of data. In comparison, a 20x20 model may require 93 kilobytes, a 30x30 model may require 135 kilobytes, and a 40x40 model may require 193 kilobytes.

Accordingly, Applicant submits that the application as filed on June 21, 2001 clearly describes that the compressed file can have varying sizes depending on the desired quality of the digital model and may be five kilobytes to fifty or more megabytes in size, including the sizes recited in claims 23-37. The better the desired quality, the larger the file size. Applicant thus submits that based upon application as originally filed, one reasonably skilled in the art would not need undue experimentation to make and/or use the subject matter recited in claims 23-37.

Based upon the above, Applicant requests the Examiner to reconsider and withdraw the 112, first paragraph, rejection for claims 23-37.

Claims 38-39

Applicant submits that the amended claims overcome the rejections.

Rejections under 35 USC 102 and 103

Claims 1-20

Applicant submits that claim 1 is not taught or suggested by Andreiko. For example, the feature of "selecting a curved coordinate system with mappings to and from a 3D space" is not taught or suggested by Andreiko. However, for purposes of expedited prosecution, Applicant has amended claim 1 to incorporate the limitations of claim 16 which the Examiner has identified as not expressly taught by Andreiko (See: "Conclusion" section on page 17 of Office Action dated February 4, 2005). Applicant believes that this limitation is also not taught

by Bourke. Accordingly, Applicant submits that claim 1, as amended, is in a condition for allowance.

Applicant submits that claims 2-20 that depend from claim 1 are also in a condition for allowance for at least a similar rationale as discussed for the allowability of claim 1. Applicant submits that the dependent claims are also patentable for additional reasons.

For example, Applicant submits that the limitations cited in claim 9 are not taught or suggested by Andreiko or Bourke, considered individually or in combination. As indicated in the Office Action, Andreiko does not teach the feature recited in claim 9. Further, Applicant submits that Bourke also does not teach such a feature. Claim 9 recites a curved coordinate that is used to perform parametric to 3D transformations. The curved coordinate system is based upon the specific equation recited in claim 9 that is dependent upon curves phi and theta. Applicant submits that this is not taught or inherent in Bourke. Bourke merely teaches three coordinate systems for describing geometry in 3 D space and formulas for converting between the three coordinate systems. However, Bourke does not teach anything about a curved coordinate system that is based upon the specific formula recited in claim 9. Applicant submits that this is an additional reason for the allowability of claim 9.

Claims 21-41

As described in the specification, realistic digital models of teeth generally have large data sizes. As a result, transmission of such models is expensive and time consuming. Claim 21, as amended, is directed to a method of reducing problems associated with transmission of teeth information. As recited in claim 21, a 3-dimensional digital tooth model for a set of teeth is compressed at a first system to generate a compressed digital representation. The compressed digital representation, instead of the 3-dimensional model, is then communicated from the first system to a second system over a network. A 3-dimensional digital model is then generated at the second system based upon the compressed digital representation. In this manner, communication of the voluminous 3-dimensional digital model is avoided.

Applicant submits that at least this concept recited in claim 21 is not taught or suggested by Andreiko or Bourke, considered individually or in combination. Applicant submits

that Andreiko is not concerned about compression of teeth data to facilitate transmission. Andreiko describes an automated design and manufacturing system for manufacturing customized appliances for patients. Fig. 1 in Andreiko and the associated description indicates that information relating to a patient's mouth may be communicated from a doctor's office 11 to a remotely located appliance design and manufacturing facility 13 where the information is used to generate a customized appliance for the patient. Information may also be communicated from the appliance facility to the doctor's office. (See Andreiko: col. 10 line 60 - col. 11 line 8; col. 12 line 22 - col. 14 line 3). Applicant however submits that Andreiko fails to teach or suggest compressing a 3-dimensional digital model for a set of teeth prior to a communication and communicating the compressed data instead of the 3-dimensional digital model data.

Furthermore, since Andreiko does not teach anything about communication of compressed data, it also fails to teach or suggest generating a 3-dimensional teeth model at the system receiving the compressed data based upon the received compressed data, as recited in claim 21. There appears to be no teaching or suggestion in Andreiko of generating a 3-dimensional model based upon compressed data either at the appliance design and manufacturing facility (when information is transmitted from the doctor's office to the appliance design and manufacturing facility) or at the doctor's office (when information is communicated to the doctor's office from the appliance design and manufacturing facility).

Based upon the above, Applicant submits that Andreiko fails to teach the features recited in claim 21. Further, the deficiencies of Andreiko are not cured by Bourke. Bourke does not teach or suggest anything about communication of data. Accordingly, even if Andreiko and Bourke were combined as suggested in the Office Action (even though there appears to be no motivation for the combination), the resultant combination would also fail to teach or suggest the features recited in Applicant's claim 21.

In light of the above, Applicant submits that claim 21, as amended, is allowable over Andreiko and Bourke, considered individually or in combination.

Applicant submits that claims 22-41 that depend from claim 21 are also in a condition for allowance for at least a similar rationale as discussed for the allowability of claim 21. Applicant submits that the dependent claims are also patentable for additional reasons.

New Claims

New claims 42-44 have been added to claim various aspects of the invention. Applicant submits that these claims are in a condition for allowance.

RELATED APPLICATIONS

The present application is a continuation-in-part application of U.S. Application No. 09/576,721 (Attorney Docket No. 018563-003400US) filed May 23, 2000 which issued as USP-6,633,789.

Applicant would like to bring to the Examiner's attention the following co-pending applications that are related to the present application:

(1) U.S. Application No. 10/359,998 (Attorney Docket No. 0180563-003420US) filed February 7, 2003. This application is a continuation of the above-referenced U.S. Application No. 09/576,721 (Attorney Docket No. 018563-003400US) filed May 23, 2000 which issued as USP-6,633,789; and

(2) U.S. Application No. 10/951,491 (Attorney Docket No. 0180563-003430US) filed September 27, 2004. This application is a continuation of (1).

Examiner is requested to expressly consider the prosecution of the above-referenced applications during the prosecution of the present application. More specifically, the Examiner is requested to consider the various Office Actions received during the prosecution of the present application (e.g., Office Action dated 3/16/05 received in (2)).

INFORMATION DISCLOSURE STATEMENT (IDS)

An IDS is being filed along with this amendment response.

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CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400.

Respectfully submitted,

S. B. Kotwal

Sujit B. Kotwal
Reg. No. 43,336

TOWNSEND and TOWNSEND and CREW LLP
Two Embarcadero Center, Eighth Floor
San Francisco, California 94111-3834
Tel: 650-326-2400
Fax: 650-326-2422
Attachments
SBK:km
60534276 v1